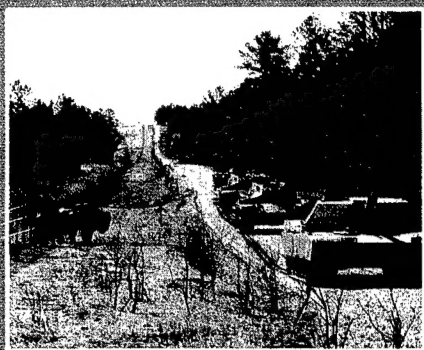


ENVIRONMENT * SAFETY * OCCUPATIONAL HEALTH

ARMY

1985 ACCOMPLISHMENTS REPORT



Reproduced From
Best Available Copy

M A Y 1 9 8 6

20000929 028

Contents

T H E E N V I R O N M E N T A L P R O G R A M

Environmental Quality Goals	4
Installation Restoration Program	5
Water and Air Programs	6
National Environmental Policy Act Compliance	8
Waste Minimization Program	8
Environmental Noise Program	9
Worldwide Army Environmental Conference	9
Secretary of the Army Environmental Quality Award	10
Environmental Research and Development	10
Environmental Audits Program	11
Army Environmental Training Programs	11

T H E S A F E T Y P R O G R A M

Ground Safety	12
Aviation Safety	16
System Safety	17
SafeArmy 1990	17
Presidential Injury/Illness Reduction Goal	18
Centralized Accident Investigation	19
Material Safety Data Sheet System	19
OSHA Evaluation of Army Safety & Occupational Health Program	19
Army Safety Training Programs	19
Family Safety	19

T H E O C C U P A T I O N A L H E A L T H P R O G R A M

Occupational Health Program Management Indicators	20
Occupational Health Management Information System	21
Health Promotion	22
Presidential Injury/Illness Goal Support Activities	23
Military Occupational Health Vehicle Project	23
Health Hazard Assessment Program	23
Army Occupational Health Training Programs	25
Occupational Health Research	25

PLEASE CHECK THE APPROPRIATE BLOCK BELOW:

AO# _____

☐ _____ copies are being forwarded. Indicate whether Statement A. B. C. D. E, F. or X applies.



DISTRIBUTION STATEMENT A:
APPROVED FOR PUBLIC RELEASE: DISTRIBUTION IS UNLIMITED



DISTRIBUTION STATEMENT B:
DISTRIBUTION AUTHORIZED TO U.S. GOVERNMENT AGENCIES
ONLY; (Indicate Reason and Date). OTHER REQUESTS FOR THIS
DOCUMENT SHALL BE REFERRED TO (Indicate Controlling DoD Office).



DISTRIBUTION STATEMENT C:
DISTRIBUTION AUTHORIZED TO U.S. GOVERNMENT AGENCIES AND
THEIR CONTRACTORS; (Indicate Reason and Date). OTHER REQUESTS
FOR THIS DOCUMENT SHALL BE REFERRED TO (Indicate Controlling DoD Office).



DISTRIBUTION STATEMENT D:
DISTRIBUTION AUTHORIZED TO DoD AND U.S. DoD CONTRACTORS
ONLY; (Indicate Reason and Date). OTHER REQUESTS SHALL BE REFERRED TO
(Indicate Controlling DoD Office).



DISTRIBUTION STATEMENT E:
DISTRIBUTION AUTHORIZED TO DoD COMPONENTS ONLY; (Indicate
Reason and Date). OTHER REQUESTS SHALL BE REFERRED TO (Indicate Controlling DoD Office).



DISTRIBUTION STATEMENT F:
FURTHER DISSEMINATION ONLY AS DIRECTED BY (Indicate Controlling DoD Office and Date) or HIGHER
DoD AUTHORITY.



DISTRIBUTION STATEMENT X:
DISTRIBUTION AUTHORIZED TO U.S. GOVERNMENT AGENCIES
AND PRIVATE INDIVIDUALS OR ENTERPRISES ELIGIBLE TO OBTAIN EXPORT-CONTROLLED
TECHNICAL DATA IN ACCORDANCE WITH DoD DIRECTIVE 5230.25. WITHHOLDING OF
UNCLASSIFIED TECHNICAL DATA FROM PUBLIC DISCLOSURE. 6 Nov 1984 (indicate date of determination).
CONTROLLING DoD OFFICE IS (Indicate Controlling DoD Office).



This document was previously forwarded to DTIC on _____ (date) and the
AD number is _____



[In accordance with provisions of DoD instructions, the document requested is not supplied because:



It will be published at a later date. (Enter approximate date, if known).



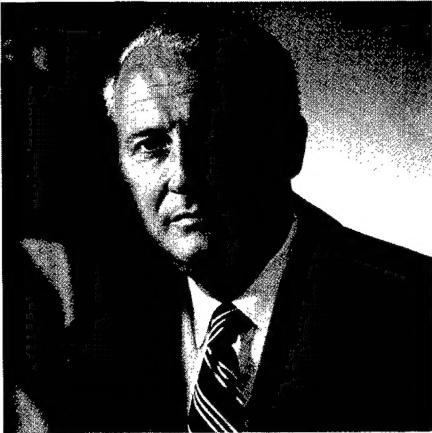
Other. (Give Reason)

DoD Directive 5230.24, "Distribution Statements on Technical Documents," 18 Mar 87, contains seven distribution statements, as described briefly above. Technical Documents must be assigned distribution statements.

Cynthia Gleisberg
Authorized Signature/Date

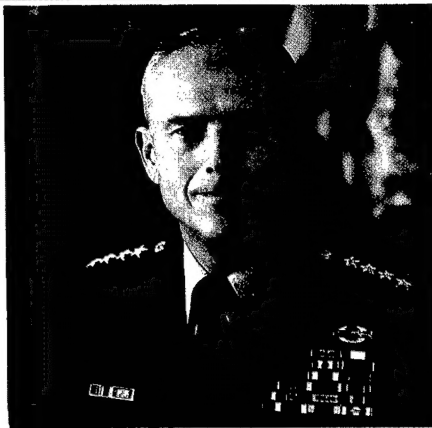
Cynthia Gleisberg
Print or Type Name
DSN 288-558-7924
Telephone Number

This report presents an overview of the 1985 accomplishments of the Environmental, Safety, and Occupational Health Programs of the Department of the Army. The objective of this report is to demonstrate that, while national defense is the Army's primary mission, there is a strong emphasis on protecting the natural environment, the health and well-being of Army personnel, both military and civilian, and Army equipment. The following sections provide details on each of the programs.



"A clean, safe environment promotes a strong America and a ready Army. We are fully committed to leading the way in these areas in managing our public lands and safeguarding our personnel assets."

John O. Marsh, Jr.
Secretary of the Army



"The strength of our great nation lies in our natural resources and our people. The Army's mission since the independence of the Republic continues to be the safeguarding of America's strength."

General John A. Wickham, Jr.
Chief of Staff, Army

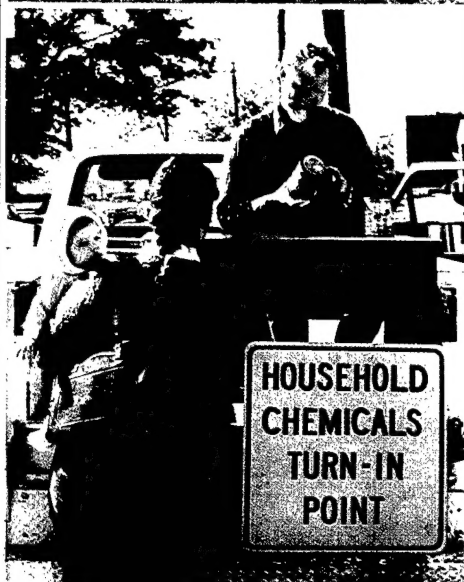


"American citizens have entrusted the Army with priceless resources . . . our people and our natural environment. That trust requires us to protect those resources with stewardship and vigilance."

John W. Shannon
Assistant Secretary of the Army

DISTRIBUTION STATEMENT A
Approved for Public Release
Distribution Unlimited

HIGHLIGHTS OF 1985 ACCOMPLISHMENTS



Environmental Program. Expended slightly more than \$59 million of the FY 1985 Defense Environmental Restoration funds made available to the Army. Significant actions were taken at Rocky Mountain Arsenal, Colorado; Twin Cities Army Ammunition Plant, Minnesota; Letterkenny Army Depot, Pennsylvania; Cornhusker Army Ammunition Plant, Nebraska; and Woodbridge Army Laboratory, Virginia.

- Spent \$43.5 million on environmental cleanup of formerly used Department of Defense sites, a threefold increase since the program started in 1984.

- Completed all contamination assessments in the Installation Restoration Program at 181 active Army installations, meeting the Department of Defense goal.

- Began an Army hazardous waste minimization program of which the used solvent elimination program was an important aspect.

- Began an Army environmental audits program to review each installation's compliance with environmental laws.

- Guided Army participation in protection of the Chesapeake Bay, funding \$6 million in FY 1985 primarily for wastewater treatment projects.

- Completed cleanup of dioxin contamination at Fort A.P. Hill, Virginia.

- Completed a contamination cleanup project at Seneca Army Depot, New York, for \$122,000, a project originally estimated to cost \$1.2 million.

- Conducted the Army's Third Worldwide Environmental Conference, which was attended by more than 400 Army personnel.

HIGHLIGHTS OF 1985 ACCOMPLISHMENTS

Safety Program. Guided redirection of the Army Safety Program to make it proactive, progressive, and mission supportive through promulgation of SafeArmy 1990, a safety plan that focuses Armywide accident prevention priorities for 1986 through 1990.

- Identified systemic shortcomings in the Army's assurance of acceptable levels of safety for the storage of ammunitions and explosives.

- Emphasized timelier and fuller attention to system safety in acquisition and product improvement processes for new or improved weapons systems to decrease costs imposed by retrofits due to safety defects.

- Directed efforts to reduce the number of civilian employee injuries, illnesses, and related compensation costs to meet Presidential goals, and, under SafeArmy 1990, initiated reduction goals for military personnel injuries and aviation and ground accidents.

- Coordinated the Department of Labor's evaluation of the Army's implementation of the Occupational Safety and Health Act; the final report by Department of Labor was complimentary of the Army's overall program and management support.

Occupational Health Program. Developed a system of management indicators for the Army occupational health program that will provide for more effective program management.

- Developed a production contract for a Military Occupational Health Vehicle (MOHV), a mobile clinic designed to bring required multiphasic job-related health screening to troop locations.

- Made major strides in developing the Occupational Health Management Information System (OHMIS) to identify employee illness impacts early and provide correction or prevention.

- Completed prototype of the hearing-loss monitoring module of OHMIS and reached final approval milestone.

- In support of the Presidential injury reduction goals, instituted an Armywide policy for Army civilians with job-related injuries or illnesses to check through an Army health or medical clinic before seeking civilian care.



THE ENVIRONMENTAL PROGRAM



The Army Environmental Program was established in the early 1970s to protect natural resources—air, water, and land—during conduct of the Army's defense mission.

During the first few years, the program focused mainly on air emissions and water discharges. While those issues still receive attention, current emphasis has shifted to hazardous and toxic waste management and cleanup of Army installations. In addition, noise continues to be an increasing concern at Army installations, particularly those with training programs.

Environmental Quality Goals. In 1985, Secretary of the Army John O. Marsh, Jr., and Army Chief of Staff General John A. Wickham, Jr., established Environmental Quality Goals that commit the Army to:

- Demonstrate leadership in environmental protection and improvement.
- Minimize adverse environmental and health impacts while maximizing readiness and strategic preparedness.
- Assure that consideration of the environment is an integral part of Army decision making.

THE ENVIRONMENTAL PROGRAM

- Initiate aggressive action to comply with all Federal, State, and local environmental quality laws.
- Restore lands and waters damaged through our past waste disposal activities.
- Support Army programs for the recycle and reuse of materials to conserve natural resources, prevent pollution, and minimize the generation of wastes.
- Pursue an active role in addressing environmental quality issues in our relations with neighboring communities.

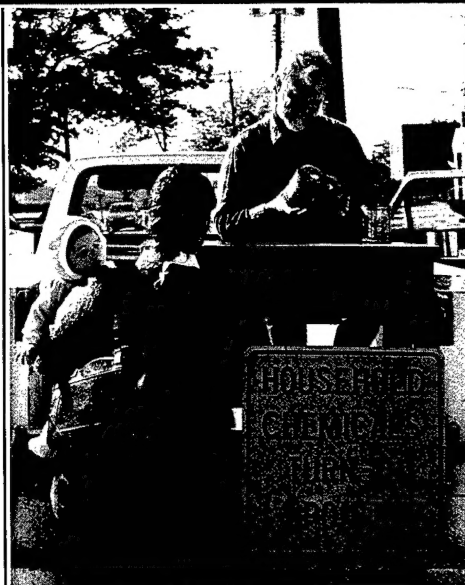
Installation Restoration Program. The Army established the Installation Restoration Program in 1975 to identify, assess, and control toxic and hazardous materials contamination at currently controlled sites. In 1984, Congress provided a new Defense appropriation to ensure that adequate resources and priority are given to contamination cleanup at currently owned and previously owned Department of Defense (DoD) sites. (Activities at formerly used DoD lands are managed by the Army regardless of which service component, Army, Air Force, or Navy, formerly controlled the site.)

Before 1984, funding levels ranged from five to ten million dollars per year. The funding levels shown below depict both the DoD program and the dramatic increase in the Army program in fiscal years 1984 through 1986.

	(Million Dollars)		
	FY 1984	FY 1985	FY 1986
Army (Currently Controlled Sites)	33.0	59.9	57.1
DoD (Formerly Controlled Sites)	12.5	43.5	45.0

Currently Controlled Sites. In 1985, the Army made great progress in defining the extent of environmental contamination at currently controlled sites. The \$59.9 million budget was spent on soil and groundwater contamination problems at about 60 installations, including 20 Army depots (AD), ammunition plants (AAP), and installations on the Environmental Protection Agency (EPA) National Priorities List for hazardous waste sites.

The Army achieved the DoD goal of completing 181 installation assessments for potential contamination problems between 1976 and 1985. Assessment reports identified 55 installations requiring follow-on confirmation surveys. With 32 surveys already completed, work continued in 1985 at 16 installations. The most extensive surveys were at Rocky Mountain Arsenal, Colorado; Alabama Army Ammunition Plant;



National Priorities List

Aberdeen Proving Ground
Alabama Army Ammo Plant
Anniston Army Depot
Cornhusker Army Ammo Plant
Fort Dix
Fort Lewis
Joliet Army Ammo Plant
Lake City Army Ammo Plant
Letterkenny Army Depot
Lone Star Army Ammo Plant
Louisiana Army Depot
Milan Army Ammo Plant
Rocky Mountain Arsenal
Sacramento Army Depot
Savannah Army Depot
Sharpe Army Depot
Tooele Army Depot
Twin Cities Army Ammo Plant
Umatilla Army Depot
West Virginia Ordnance Works



Letterkenny Army Depot, Pennsylvania; Twin Cities Army Ammunition Plant, Minnesota; and Cornhusker Army Ammunition Plant, Nebraska.

Of the 25 Army installations proposed for final cleanup actions, 7 have been completed, and cleanup actions continued at 7 more in 1985. These included removal of PCB-contaminated soil at Woodbridge Research Facility, cleanup of dioxin-contaminated soil at Fort A. P. Hill, TCE (trichloroethylene) removal at Twin Cities Army Ammunition Plant, and removal of residual radioactive contamination in ammunition igloos at Seneca Army Depot, New York.

The project at Seneca Army Depot is believed to be the first of its kind undertaken by Army employees. The contamination resulted from temporary storage of uranium ore during the "Manhattan Project" conducted in the 1940s by the Atomic Energy Commission (now Department of Energy). The cost of the project using Army in-house resources was \$122,000, considerably less than the earlier estimated \$1.2 million cleanup cost.

Environmental contamination at Rocky Mountain Arsenal involves the largest cleanup operation ever attempted, with costs expected to range as high as \$700 million. In 1985, more than \$21 million went toward implementing this cleanup, which included continuing contamination investigations, disposing of 76,000 drums of waste salts, plugging the 12,000-foot-deep hazardous waste disposal well, and operating a boundary groundwater extraction and treatment system.

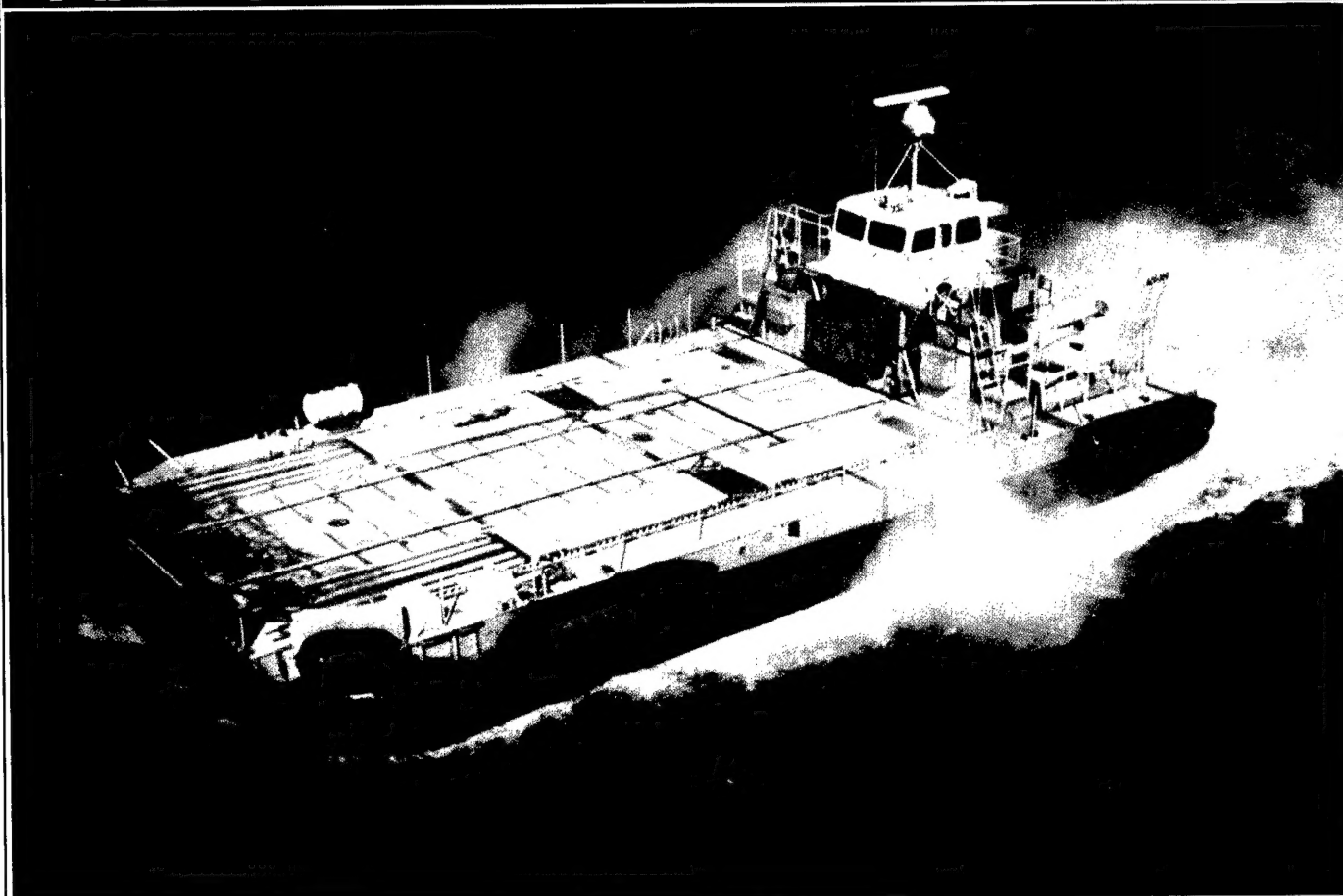
Army innovations have paved the way to more cost-effective solutions. For example:

- Cleaning contaminated groundwater on a large scale at Rocky Mountain Arsenal.
- Incineration of explosives-contaminated soil at Cornhusker AAP.
- In-place volatilization of soils contaminated with organic compounds which removed an estimated 40,000 pounds of contaminants without costly removal and land-filling of contaminated materials.

Formerly-Controlled Sites. In 1985, the program budget was \$43.5 million, a more than threefold increase from 1984 when the program started under the centralized approach. Of the 5,000 potential sites identified in 1984, more than 500 sites received an initial assessment. Confirmation studies were begun at 22 sites, and 36 cleanup projects were started. The majority of the projects involved removing hazards attributable to former defense activities on public lands, including former missile sites.

Water and Air Programs. *Army Pollution Abatement Program (APAP).* This program brings existing Army

THE ENVIRONMENTAL PROGRAM



facilities into compliance with Federal and State laws and regulations for clean air and water. In 1985, six projects were funded at a cost of \$43 million, of which four projects were for wastewater treatment, one for hazardous materials control, and one for air quality. A red water (water containing explosives residue) treatment facility at Radford AAP, Virginia, is the largest APAP project in program history (\$26 million).

As a part of APAP, the Army operates a wastewater assistance program to increase treatment efficiency through improved operation and maintenance of Army wastewater treatment facilities worldwide.

In 1985, program accomplishments included 33 site visits and evaluations and 9 followup assistance visits. A final step is to conduct followup visits 6 months after the assistance visits are made. An example of the benefits of this program is the reduction of permit violations at Fort Rucker, Alabama. In the year before the first visit, Fort Rucker had 176 permit violations; the year following the visit, only 15 permit violations were recorded.

Protection of the Chesapeake Bay. Department of Defense and EPA signed a joint resolution on pollution abatement in the Chesapeake Bay on 13 September 1984. Army actions completed in 1985 include:





- Developing a self-audit for installations in the Chesapeake Bay Region to discover environmental problems and to help prioritize corrective actions. Six Army installations conducted self-audits in 1985.
- Coordinating with EPA the updating or issuance of wastewater discharge permits.
- Reviewing all land management plans at Army installations within the Chesapeake Bay Region.
- Scheduling 22 large-scale construction projects for 1985-89 and 109 smaller pollution abatement projects in the Chesapeake Bay Region.
- Providing \$6 million primarily to treat wastewater before discharging it into the bay.

National Environmental Policy Act Compliance.

The impact of significant Army actions on the human and natural environment must be assessed under the provisions of the National Environmental Policy Act (NEPA). Major accomplishments in 1985 included—

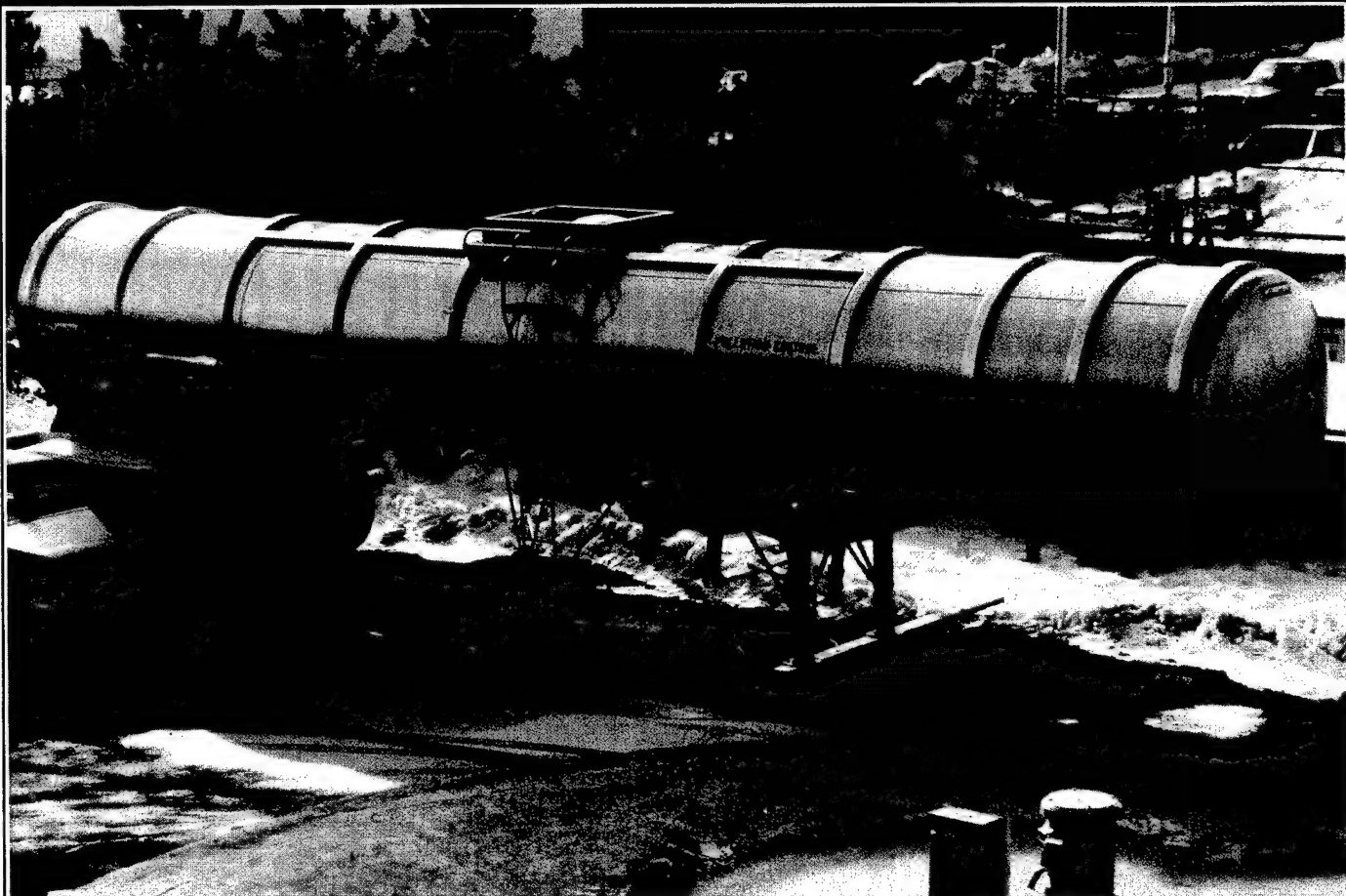
- Addressing Army interests in Environmental Impact Statements for high-level radioactive repositories, oil and gas lease sales in the Gulf of Mexico, and Coastal Resources Management Program for Coastal Resources of the Commonwealth of Virginia.
- Initiating or completing preparation of Environmental Impact Statements and Environmental Assessments for the following proposals: Special Operations Forces Stationing; M55 Rocket Assessments; Stationing of the School of the Americas; and Precursors for Binary Chemical Munitions Production Facilities.
- Providing guidance and direction on compliance for proposed projects in the Chemical/Biological Defense Program at White Sands, New Mexico; Dugway, Utah; Aberdeen Proving Ground, Maryland; and Fort Detrick, Maryland.
- Establishing policy and providing direction on NEPA compliance on the Army Military Construction Program, joint services field training exercises, Army Reserve training site selection, and contamination cleanup projects.

Waste Minimization Program. The need to reduce waste is growing in importance to the Army because it will result in reduced disposal costs and long-term liability in the handling and disposal of hazardous wastes. The following are highlights of the Army's efforts during 1985:

- Major Army commands developed used solvent elimination (USE) programs to reduce disposal costs.
- A joint service task force was formed to outline and identify goals for a waste minimization program.



THE ENVIRONMENTAL PROGRAM



- Army Materiel Command took the lead in initiating a command-wide waste minimization program plan. This plan, which will be useful as an Armywide pilot program, will be completed in 1986.

Environmental Noise Program. Noise generated by Army training activities on installations is a growing environmental problem in the United States as well as in Europe. The Installation Compatible Use Zone (ICUZ) Program was developed to identify areas subject to high noise levels and deal with associated problems at all Army installations.

In 1985 the Army held three major workshops for installation personnel on the ICUZ process. The major aim was to emphasize the need to complete the bulk of their ICUZ studies by the end of fiscal year 1987, a Department of the Army goal. Noise studies and mitigation plans are ongoing at all Army installations. During 1985 a major effort in the Federal Republic of Germany dealt with noise levels in training ranges fielding the Bradley Fighting Vehicle.

Worldwide Army Environmental Conference. The Third Worldwide Army Environmental Conference, whose theme was "Defending the Nation and the Environment," was held in December 1985 in Norfolk,





Virginia. Four hundred people from all over the Army attended at least part of the week-long conference, the first held in 8 years.

The conference addressed several of the Army's most difficult and complex environmental concerns: hazardous and toxic waste management, noise issues, and compliance with the National Environmental Policy Act in the Army decision-making process.

Secretary of the Army Environmental Quality Award. The Secretary of the Army Environmental Quality Award is presented annually to the Army installation that conducted the most outstanding environmental protection and enhancement program during the calendar year. Fort Dix, New Jersey, was the 1985 award winner. Fort Benning, Georgia, and Fort Eustis, Virginia, were the first and second runners-up.

Environmental Research and Development. The Army Research and Development (R&D) Program supports Army environmental needs and recommends changes as appropriate. This program establishes long-range requirements for environmental R&D through participation in trend analysis and science and technology reviews.

The 1985 accomplishments in research and development were:

- Pilot studies for the treatment of explosive-contaminated soils by composting, as provided for in a permit issued to the Army by EPA, the first of this type in the Nation.
- Long-distance dispersion models for smokes and obscurants.
- Improved field measurement technique to accurately measure noise contours.
- A system to provide installation planners with tools to display grid-cell maps; to produce imagery for displaying, referencing, comparing, and classifying aerial photography; and to develop maps for converting and integrating landscape data.
- A new, cost-effective process to thermally strip volatile organic compounds from contaminated soil on a large scale at Letterkenny Army Depot, Pennsylvania.
- A plastic bead-blasting technology for paint-stripping on a large scale at Sacramento Army Depot, California.

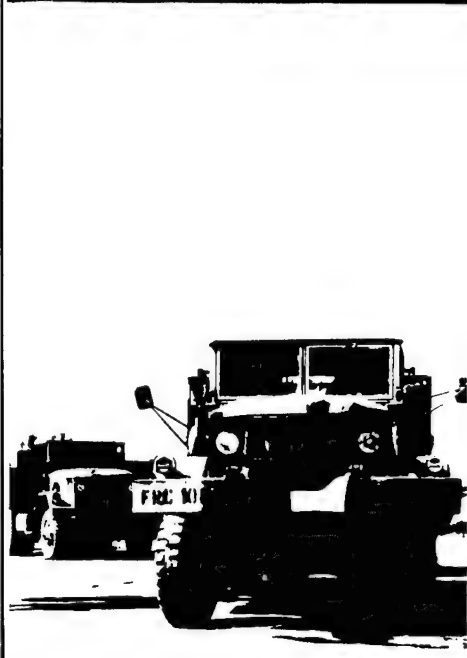
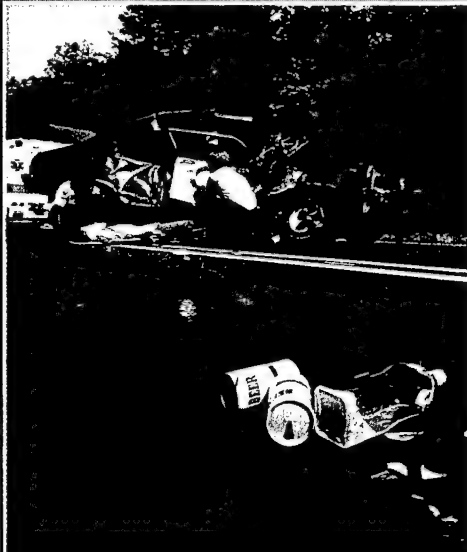
In addition, R&D was conducted to encourage plant and operations managers to adopt cost-saving practices in remote site waste disposal, wastewater facility automation and closed-loop recycling, boiler plant emission control, operational control of noise sources, and waste minimization, solvent recycling, and substitution of less toxic materials.

Environmental Audits Program. In 1985, the Army started an auditing program to improve compliance with environmental laws and regulations. A training workshop on environmental auditing, taught by EPA instructors, was held to teach Army environmental personnel how to conduct these types of audits. Six installations completed self-audits in 1985.

Army Environmental Training Programs. In 1985, a total of 1,450 Army employees attended environmental courses at Fort Lee, Virginia. General environmental training and education for Army personnel is conducted by outside instructors. Special environmental training and education courses relating to Army-unique problems, requirements, or management systems are given by the Army.

Innovative instruction methods were begun in FY 1985, including satellite education via an electronic conference board. Live television instruction is scheduled to start in 1986.





The Army Safety Program has steadily reduced accidents in all major areas of activity over the past 30 years. Still more safety gains were made in 1985.

Ground Safety. In 1985, reductions were made in privately owned vehicle accident fatalities, Army motor vehicle accidents, personnel injury accidents, and fatalities during training activities.

POV accident fatalities. Privately owned vehicle accidents are the number one soldier killer. A reduction in off-duty fatalities in four-wheeled vehicle accidents which began in 1982 continued through 1985. Fatalities were reduced 36 percent during this period. These reductions were achieved through aggressive military police enforcement and effective media programs related to alcohol and safety belt use.

- The Army's five-year anti-alcohol campaign, in its second year in 1985, focuses on the dangers of drinking and driving and the adverse legal, personal, and career consequences of alcohol abuse and drunk driving.

- The Army has made safety belt use mandatory. Ongoing campaigns and seasonal promotions are conducted in cooperation with the National Safety Council and the Department of Transportation to convince soldiers and their families that safety belts save lives.

- The Army's Privately Owned Vehicle Accident Prevention Program is aimed at preventing driver errors through development of an Army-unique driver training program designed to correct accident-causing behavior.

Army motor vehicle accidents. Programs to improve safety in Army motor vehicle (AMV) operations have resulted in an 11-percent reduction in accidents over the past 5 years. One notable achievement was in reducing accidents involving overturn of the M151 jeep, a primary tactical vehicle in the AMV inventory.

Rollover accidents have been reduced 23 percent over the past 5 years, with a significant reduction being achieved in 1985. Lessons learned from the M151 have resulted in safety improvements being designed into its replacements, the new High Mobility Multipurpose Wheeled Vehicle and the Commercial Utility Cargo Vehicle. Both vehicles are equipped with seatbelts and integrated rollover protection.

Key programs to improve the safety of AMV operations included the following:

- Developed rollover protection and passenger restraint for the M151 jeep.
- Developed a proposal for rollover protection for the 8-ton truck and the 10-ton wrecker, both of the "GOER" vehicle series.



- Fabricated and tested restraint systems for 2½- and 5-ton trucks.

- Reduced brake-related accidents from 66 accidents with three fatalities in 1983 to 41 accidents with no fatalities in 1985.

- Developed a comprehensive manual to standardize driver training Armywide and revised the Army regulation governing driver selection and licensing to include standardized driver training requirements.

Personnel-injury accidents. The Army is aggressively seeking ways to reduce injury-producing accidents during maintenance activities and during on- and off-duty recreational activities. Both areas are major injury producers. Efforts during 1985 included the following:

- Developed a Maintenance Accident Prevention Program to target a leading cause of on-duty personnel injuries in maintenance, repair, and servicing activities.





Program elements include maintenance training improvements, a maintenance battalion commanders' safety support package, safety films, media campaigns, and accountability requirements.

- Developed a Recreation Accident Prevention Program aimed at preventing injuries to soldiers during both on- and off-duty recreational activities including basketball, softball, football, and water-related activities.

- Developed and implemented procedures for including hazard identification and control information in Soldiers Manuals, the how-to-do handbooks for each military occupational specialty.

- Increased soldier safety awareness through a comprehensive multimedia safety communications system that involves all phases of safety in both on- and off-duty activities.

- Developed a soldier's safety handbook for first-term enlistees to alert them to hazards unique to Army training and operations.

Safety in training exercises. The Army achieved a 24-percent reduction in military fatalities in all training activities in 1985. Efforts included the following:

- Army safety specialists provided safety assistance to field commanders in planning and executing training exercises for both air and ground operations.

- An armor battalion command support packet was furnished to commanders of Army armor units. The packet focused on preventive measures for the kinds of operational accidents that have the potential to rapidly deplete armor unit capabilities under combat conditions.

- An Army motor vehicle accident prevention kit was developed to target, by vehicle, the most frequent driver errors causing accidents in Army motor vehicles.

- An Army safety training film for use by Army units before deployment to the National Training Center, Fort Irwin, California, is currently in production. This film highlights necessary safety measures in pre-exercise planning.

- The Army developed and produced a film that focuses on the special hazards of operating Army motor vehicles in the Republic of Korea.

- An Army safety training film depicting the hazards of cold-weather training was prepared. It is viewed by Army personnel being assigned to or participating in field training exercises in Germany.

- Production is scheduled to begin in 1986 on an Army safety training film depicting the most frequent causes of and prevention of accidents involving tracked vehicles, particularly tanks.

- Approval was obtained for an Army Division Accident Prevention Test in two armored divisions at Fort Hood, Texas. This test will evaluate the



effectiveness of more fully staffed divisional safety organizations and the value of risk management concepts in an intensive combat training environment.

Explosives safety. Explosives safety was of special concern during 1985. As a result of two accidents involving contract carriers transporting DoD munitions, the Army worked with the National Transportation Safety Board and Congressional Committees to revise DoD transportation and emergency assistance policies and procedures. Other key actions during the year include the following:

- Army Secretariat policy guidance on a concerted effort to eliminate explosives safety waivers Armywide.
- Action to obtain funding support for essential depot and port modifications to eliminate waivers.
- Improved management and review of site safety plans.
- Formulation of working groups to resolve special explosives safety problems in Korea, Europe, and Japan.
- Development of specific abatement plans to eliminate explosives safety violations.
- Expanded explosives safety training for personnel in the field.





The Risk Management Approach

A concept for
balancing
risks with
mission needs



Aviation Safety. The 1985 rate for serious (Class A through C) aviation accidents was 8.81 accidents per 100,000 flying hours compared to 8.58 in 1984. Despite this slight increase, there has been a 23-percent reduction in aviation mishaps since 1982. This 4-year decline occurred while Army helicopters were shifting from low- to medium-risk flying; i.e., operating at treetop versus higher altitudes, night versus daytime, higher speeds, increased payloads, night slingloads, and more complex and sophisticated aircraft. Evidence of this increasingly more demanding aviation mission was borne out by the fact that 58 percent of the accidents in 1985, minus those with materiel implications, happened during tactical training; 33 percent happened at night. Some 19 percent involved the use of night vision goggles.

Managing increasing risks in aviation. The Army's approach to improving the ability of unit commanders to better manage increasingly more demanding mission profiles involves the application of a systematic risk management process. This approach is being taught in the Aviation Precommand Course and Aviation Safety Officer Course. A plan is under way to integrate formal risk management training into Army curriculums for officers and noncommissioned officers in late 1986.

Reducing human error. A multifaceted program is under way to reduce human-error aviation accidents. This program includes:

- Use of flight data recorders in Army aircraft.
- Acquisition of improved aviation night vision goggles.

T H E S A F E T Y P R O G R A M

- Development of accident scenarios and pilot decision-making training for aviators.

- Assessment of programs used to evaluate Army aviators from their initial selection as flight candidates, through flight school, to their continued performance as Army aviators.

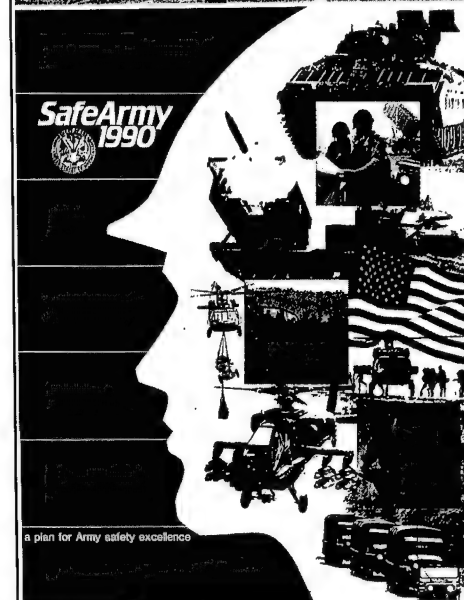
Materiel improvements. A Flight Safety Parts and Aircraft Life Surveillance Program was approved in 1985. This cooperative Army-industry effort provides life cycle management of aircraft parts.

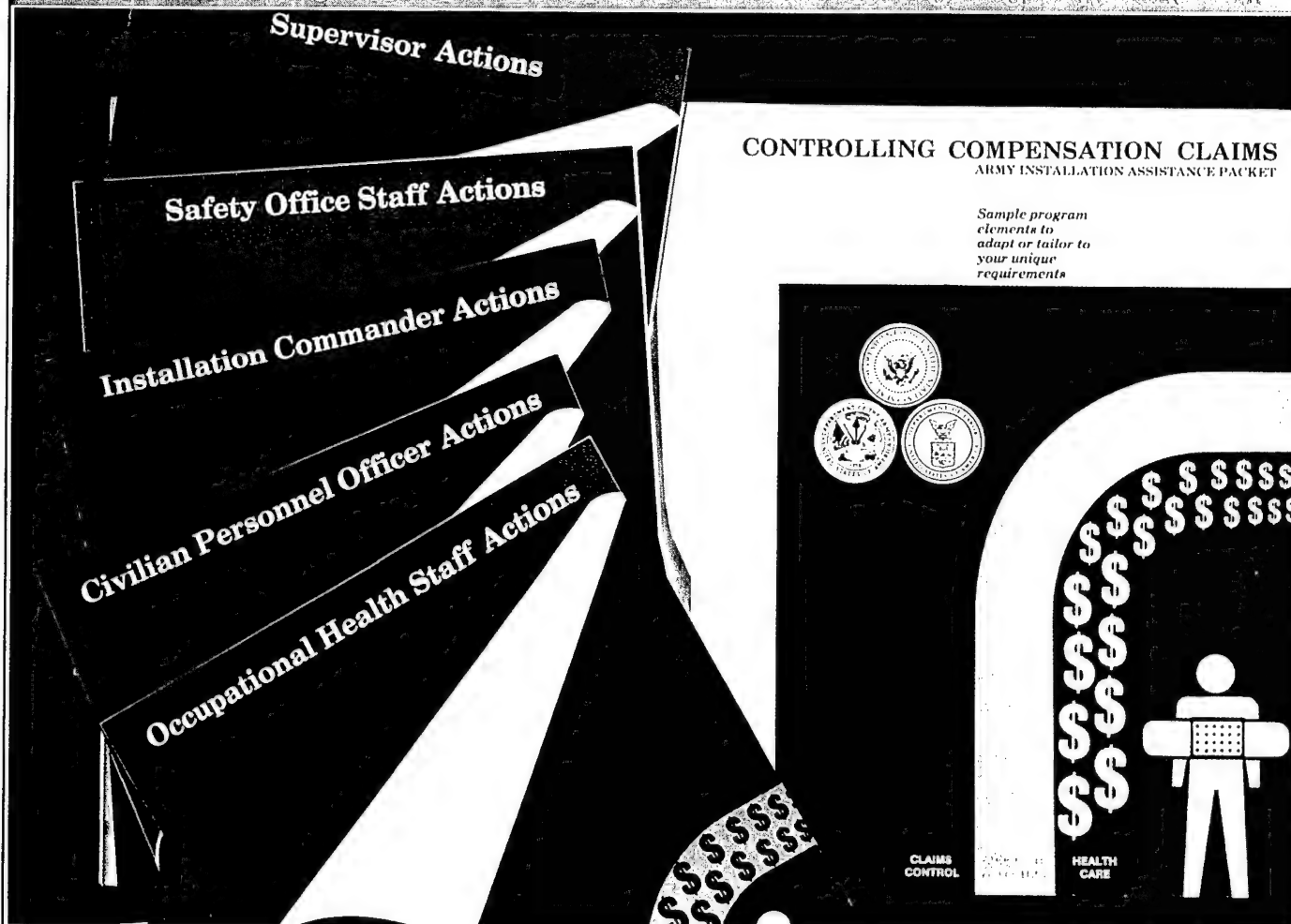
System Safety. Safety objectives related to materiel acquisition are managed through the Army System Safety Program. Historically, many safety deficiencies were not corrected until late in the life cycle of the equipment, requiring costly retrofits. Significant strides made in 1985 included—

- Requiring system safety responsibilities in system project managers' charters.
- Reviewing safety issues at Army System Acquisition Review Councils.
- Improving testing procedures to ensure detection of hazards in developmental equipment before fielding.
- Emphasizing greater user involvement earlier in the development process.
- Updating a system safety engineering and management regulation that incorporates the above actions plus improving procedures for integrating safety into the Product Improvement Program and Engineering Change Proposals.
- Initiating actions to ensure safety is adequately addressed in the Army's streamlined 4-year development acquisition process. Shortening the acquisition period moves key decisions to earlier points in the life cycle and compresses the time available for key system safety reviews and audits.
- Improving system safety training for safety interns and other key materiel development personnel.

SafeArmy 1990. SafeArmy 1990, a 5-year safety program plan for the Army, was developed and approved by the Army Chief of Staff during 1985. The plan outlines key actions and identifies responsible proponents to accomplish the actions in support of the goals for each year through 1990.

As the Army's first formal safety plan, SafeArmy 1990 provides overall focus and direction to the Army Safety Program. While it identifies long-term areas of concern, goals, and objectives, it allows major commands to develop their own specific tactics for reaching the goals. Progress reports on SafeArmy 1990 goals are presented to the Army's top leadership during quarterly reviews.





Presidential Injury/Illness Reduction Goal. A 1983 Presidential directive called for reduction of occupational injuries and illnesses by 3 percent each year from FY 1984 through FY 1988. Army civilian compensation costs rose from \$91.5 million in 1984 to \$97.6 million in 1985. During 1985, the Army took several key actions to improve safety in the workplace and reduce the number of civilian injuries as measured by workers' compensation claims.

- Monthly meetings are held at Secretariat level to stimulate positive activity among the Director of Army Safety, the Director of Civilian Personnel, and the Surgeon General's Office.
- A comprehensive information package on procedures to reduce injuries and control claims was prepared jointly by the Office of The Surgeon General, the Army Civilian Personnel Center, the Army Environmental Hygiene Agency, and the Army Safety Center. This package was based on the success that Watervliet Arsenal, New York, had in achieving the goal.
- Directives were sent to the field to strengthen field claims-processing procedures. Included are medical referral, medical review of claims, and other procedures designed to assure that claims are legitimate and



processed in a cost-effective manner and that actions are taken to prevent recurrence.

These efforts are already showing signs of progress through decreases in claims rates, in continuation-of-pay costs, and in lost-time claims.

Centralized Accident Investigation. Part of the resources committed to this program were refocused during 1985 to the development of prevention programs. This improved the balance between the flow of accident causation information and the fielding of prevention programs to eliminate accident causes. Army safety teams investigate catastrophic air and ground accidents, particularly those of high visibility or special interest.

Material Safety Data Sheet System. To keep installation workplace personnel informed about chemicals they work with, a draft regulation implementing this system was completed during 1985. Also, an automated system to assure proper coding of hazardous materials and tie-in to the material safety data sheet system was developed for use in the purchasing commodity commands. Finally, efforts were begun to enable field locations to obtain data sheets on a computerized system rather than the existing microfiche procedures.

OSHA Evaluation of Army Safety and Occupational Health Program. The Occupational Safety and Health Administration (OSHA), Department of Labor, conducted an indepth review of the Army Safety Program for civilian personnel during 1985. Although the report addressed some specific safety hazards at field sites and noted some program management deficiencies, it concluded that "Overall the Army Program is an effective one. . . . In management support which was observed at all levels of the Army command structure, the Army program was commendable."

Army Safety Training Programs. The Army provides indepth safety training for commissioned and noncommissioned officers at unit level and for safety professionals at installation level. In 1985—

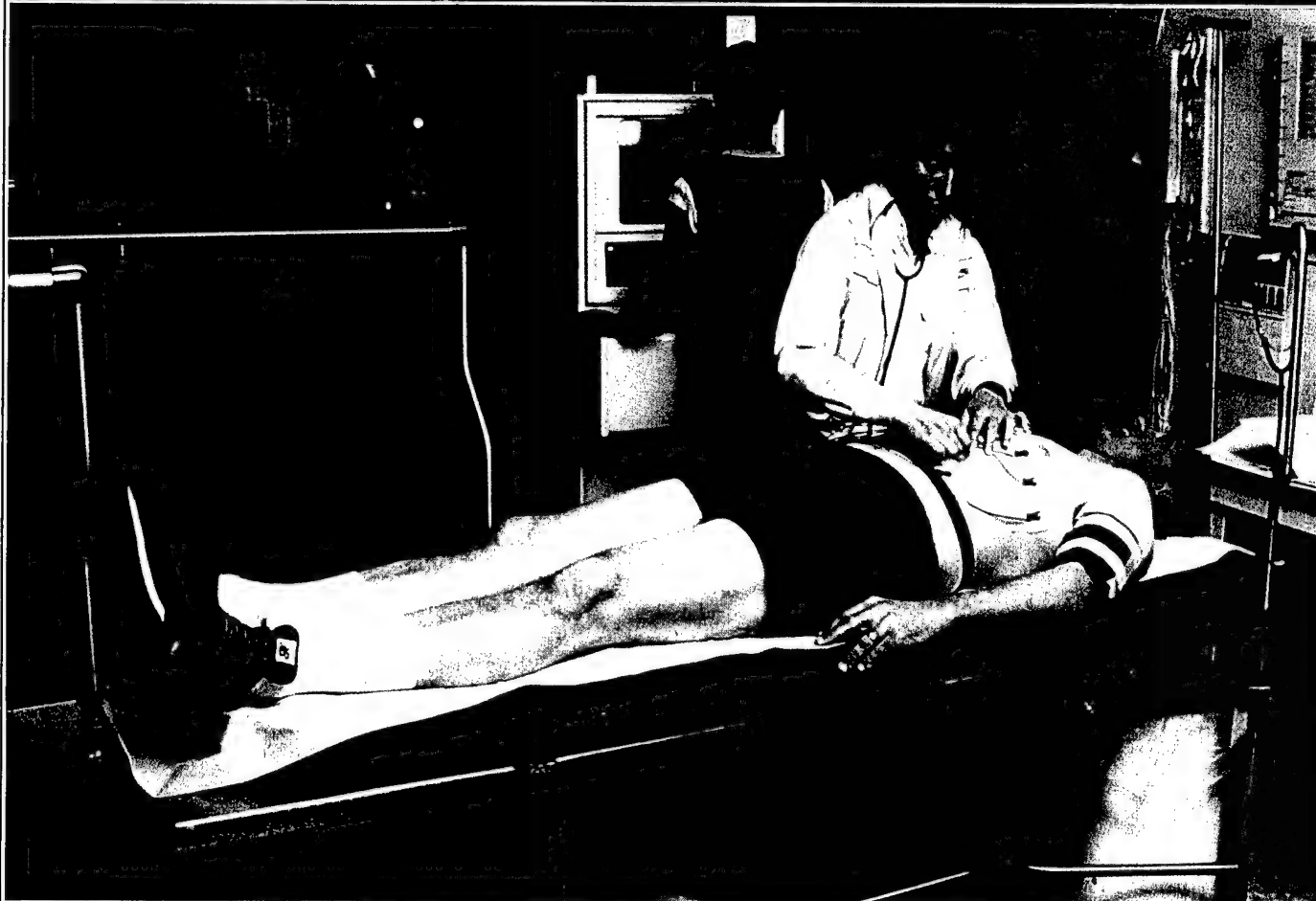
- Arrangements were completed to nearly double the number of training courses available to safety personnel and selected leaders.

- Conceptual work was completed on a comprehensive program to integrate safety into all Army leadership training.

Family Safety. A family safety action plan was initiated in 1985, and funds have been made available to implement the program. Information targeted at Army family safety will be distributed Armywide in 1986.



THE OCCUPATIONAL HEALTH PROGRAM



The primary purpose of the Army Occupational Health Program is to sustain a physically and mentally capable work force, both military and civilian. The program focuses on:

- Ensuring that employees' health is adequate to perform their duties effectively and safely.
- Monitoring the effect that job exposures have on employees' health.
- Controlling health hazards in the workplace.

While the formal program has existed for 40 years, occupational health is now recognized at the Army Secretariat level. This increased visibility has aided the program's acceptance as a viable approach to improving the productivity of Army personnel, decreasing the amount of lost work time, and reducing the cost of job-related injuries, illnesses, and disabilities.

Occupational Health Program Management Indicators. Comprehensive detailed management indicators were developed for the first time in 1985 as a requirement for reporting to the Army Secretariat. These indicators provide the basis for policy revisions and data for monitoring program efficiency. The required management data include details on—

- Occupational Health Program evaluations.

THE OCCUPATIONAL HEALTH PROGRAM

- Occupational health staffing and professional development.
- Health hazard evaluations of industrial operations.
- Medical compensation claims.
- Hearing conservation program implementation.
- Commercial contract funding to provide occupational health support to Army installations.
- Program management worldwide by each major command.

Occupational Health Management Information System (OHMIS). The Army occupational health community has long wanted an Armywide computer-based management information system. Such a system would allow for automated processing of medical surveillance data, occupational exposure data, centralized analysis, and instant feedback to the occupational health practitioner in the field. In 1985, the Army made considerable progress toward making the OHMIS concept a reality.

The system has three major components. These components, discussed below, are being integrated into the system independently.

Army Hearing Evaluation Automated Registry System (HEARS). This program monitors the effectiveness of the Army's hearing conservation efforts. The HEARS module was integrated into OHMIS in late 1985.

All soldiers and civilian employees who routinely perform duties that involve hazardous noise exposure are required to receive a baseline and then periodic (at least annual) hearing evaluations. Copies of these baseline audiograms and other hearing conservation data are forwarded to the Army Environmental Hygiene Agency for entry into HEARS. By 30 December 1985, nearly three-quarters of a million records had been entered into the data base.

In 1985, for the first time, HEARS data were used to supplement the findings of on-site hearing conservation surveys of installation programs. This centrally processed data was used to support improvements in local programs.

Current plans include complete automation so that data may be entered at audiometer test sites. Also planned are interfaces with personnel data bases and other OHMIS modules so that hearing data will automatically be entered into other required files.

Specifications for microprocessor-controlled audiometers were also completed in 1985. When installed in 1986, these systems will reduce the potential for technician error. In addition to more reliable audiometric test results, automated testing and data entry procedures will reduce program costs.



THE OCCUPATIONAL HEALTH PROGRAM



Health Hazard Inventories. Inventories of workplace health hazards at all Army installations have been completed. In 1985, a contractor began converting the inventories to the computerized OHMIS format. This will allow for direct loading of hazard inventories into the hazard information module of OHMIS, eliminating the cumbersome and inefficient manual preparation that has been employed until now.

Occupational Medicine Information. In 1985, significant progress was made in developing the occupational medicine information portion of OHMIS. A system model was tested in the medical activity at Fort Meade, Maryland, and the lessons learned were used in redefining the model. The redefined model is scheduled to be field tested at Fort Campbell, Kentucky, in 1986.

Health Promotion. During 1985, the Army continued its emphasis on health. The Occupational Health Program assisted in this effort by conducting programs in high blood pressure prevention, drug and alcohol treatment referrals, and smoking cessation, intervention, and counseling for soldiers, civilian employees, and family members.

THE OCCUPATIONAL HEALTH PROGRAM

Presidential Injury/Illness Goal Support Activities. To support the Presidential injury and illness reduction goal described in the safety section, several actions were begun in 1985 to increase occupational health clinic participation in this effort.

Ill and injured employees are encouraged to use the occupational health clinic, thereby avoiding the claims generated when private physicians provide treatment. In addition, occupational health clinic personnel review cases of employees expected to be out of work for 2 weeks or more to ensure their medical problems receive proper attention and the system is not being abused. Occupational health clinics also take part in establishing light-duty reemployment programs, in providing medical documentation when claims are challenged, and in reviewing long-term disability rolls.

This emphasis on increased occupational health clinic participation yielded some encouraging results:

- The average number of workdays lost per injury claim decreased.
- Continuation-of-pay costs dropped from \$5.7 million in 1984 to \$5.2 million in 1985.
- The number of claims per thousand employees decreased.
- The Army achieved the lowest civilian hearing loss claims rate in the Department of Defense.

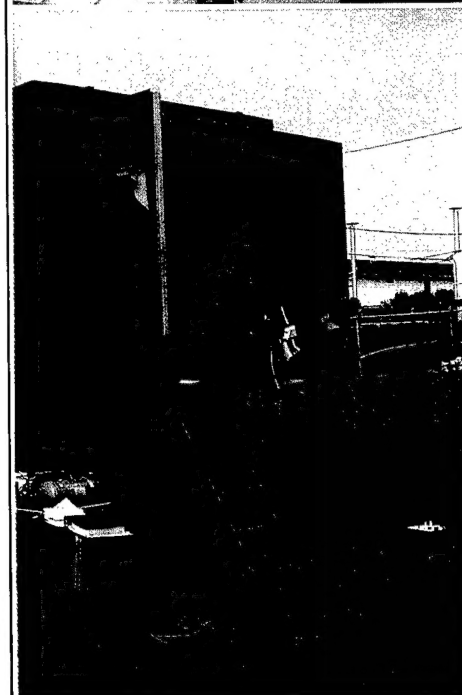
Military Occupational Health Vehicle Project. In 1985, specifications were finalized for the production of 25 military occupational health vehicles (MOHVs). These vehicles will provide work-site health monitoring at installations in the continental United States, Hawaii, Panama, Korea, and Germany.

Experience gained from five mobile systems already in use and extensive civilian experience were used in developing the MOHVs. The vehicles will provide state-of-the-art measurements in audiometry, electrocardiometry, pulmonary function, vision screening, and blood sampling at work sites.

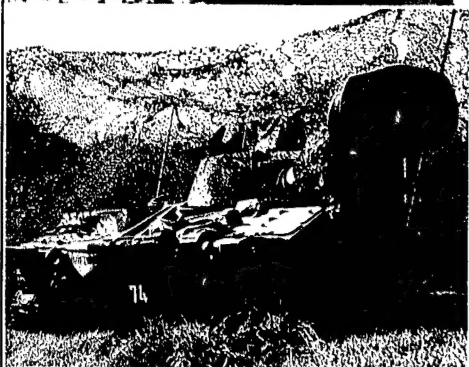
The MOHVs will save money by decreasing requirements to transport soldiers and civilian employees to medical treatment facilities, decreasing time away from the job, and increasing the efficiency of the medical staff.

Health Hazard Assessment Program. To avoid costly retrofit in fielded equipment, assessment of potential health hazards during development is necessary. A new Army Medical Department program evaluates all types of materiel, from soldiers' personal equipment to major weapons systems, being developed by the Army.

The Army Medical Department got involved early in



THE OCCUPATIONAL HEALTH PROGRAM



the howitzer and light helicopter programs. The Department reviewed test plans, participated in special working groups, and increased its involvement in taking field measurements during test trials. These efforts greatly increased the effectiveness of the health hazard assessment process.

During 1985, the Office of the Surgeon General received 95 requests, 30 more than in 1984, for health hazard assessments of systems in various stages of development. Of these, 78 were completed in 1985.

To achieve the greatest combat power within its resource limitations, the Army has recognized that maximum efficiency must be achieved in the manning of its equipment. To that end, MANPRINT, a major program to coordinate military equipment system development with military personnel resources and training needs, was begun in 1985. Health hazard assessment, an essential part of MANPRINT, was included in the new MANPRINT Officers Staff Course in 1985. This will make those personnel involved in the materiel acquisition process more aware of health hazard assessment requirements.

THE OCCUPATIONAL HEALTH PROGRAM

Army Occupational Health Training Programs.

The Army continued to operate the Department of Defense's only occupational medicine residency program for military physicians.

After completing a masters' degree program at a civilian university school of public health, occupational health residents complete 1 year of practical training at the Army Environmental Hygiene Agency. The Occupational Medicine Program trains doctors from other military services and the U.S. Public Health Service as well as Army doctors. In addition, the Army continues to sponsor a military physician assistant each year in a 2-year occupational health masters' degree program at the University of Oklahoma.

In the area of continuing education, at least 20 courses and workshops were held during 1985. More than 500 active Army, Army civilian, Army Reserve, and Army National Guard occupational health personnel attended this training. Topics covered included occupational medicine, general program management, industrial hygiene, audiometry and hearing conservation, pesticide management, and ionizing and nonionizing radiation.

Occupational Health Research. In 1985, Army research in occupational health was pursued in the following areas:

- Chemical weapons. Research involved exposure to and handling, maintenance, and destruction of chemical weapons.
- Conventional weapons. Research was directed toward developing a data base for soldier and civilian worker exposure to chemical hazards in conventional weapons systems and to recommend criteria, guidelines, and corrective measures for exposures to identified chemical hazards.
- Fuels and lubricants. Assessment was made of the health hazard potential of military fuels (including their vapors and combustion products) and lubricants. Also included were those whose sources are other than conventional and whose uses are innovative and unique.
- Smoke and obscurants. Work continued on a health hazard data base for smokes and obscurants. From this, health protection guidelines and exposure criteria will be developed for military personnel in the field and for support personnel in the industrial workplace. This work has also been essential to the program of health hazard assessment for military equipment development.

Research continues on updating criteria for levels of blast overpressure to which artillery crews may be safely exposed. Additional research is being conducted on whole body vibration and helicopter crew injury epidemiology as well as continuing studies on heat stress and its effect on soldiers.

